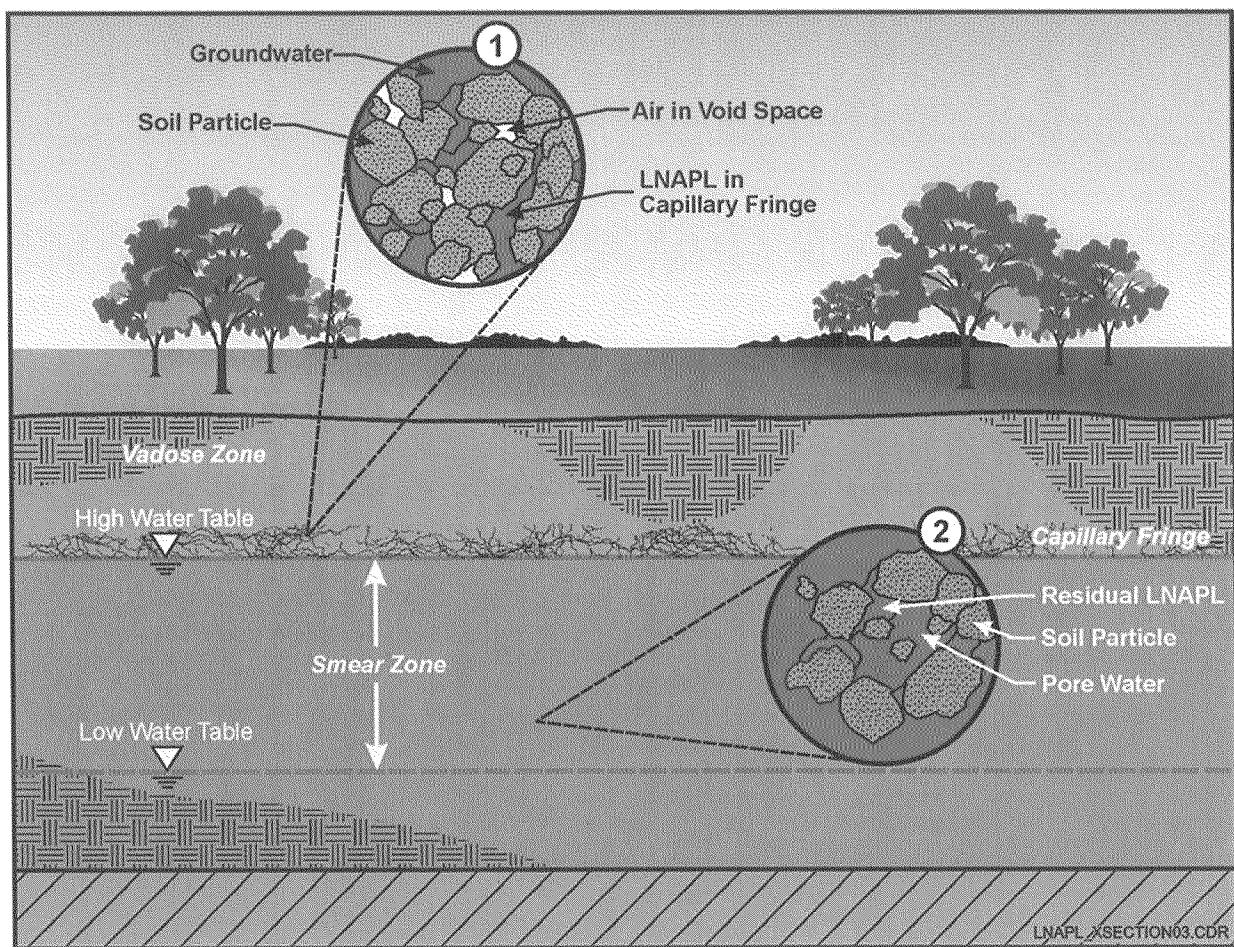


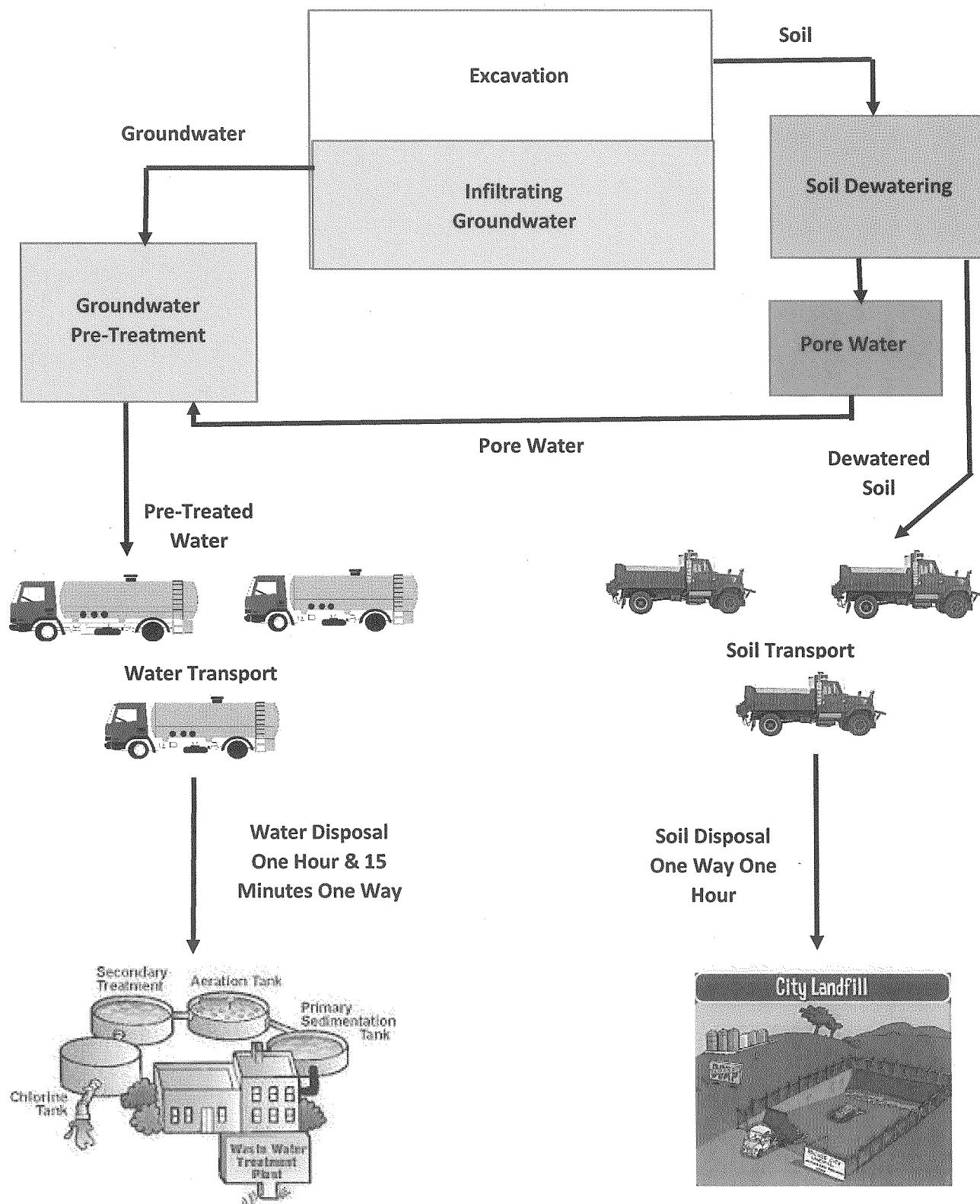
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Excavation Process



AS/SVE Technology Description

Use Air Sparging and Vapor Extraction to Remediate Subsurface Organics

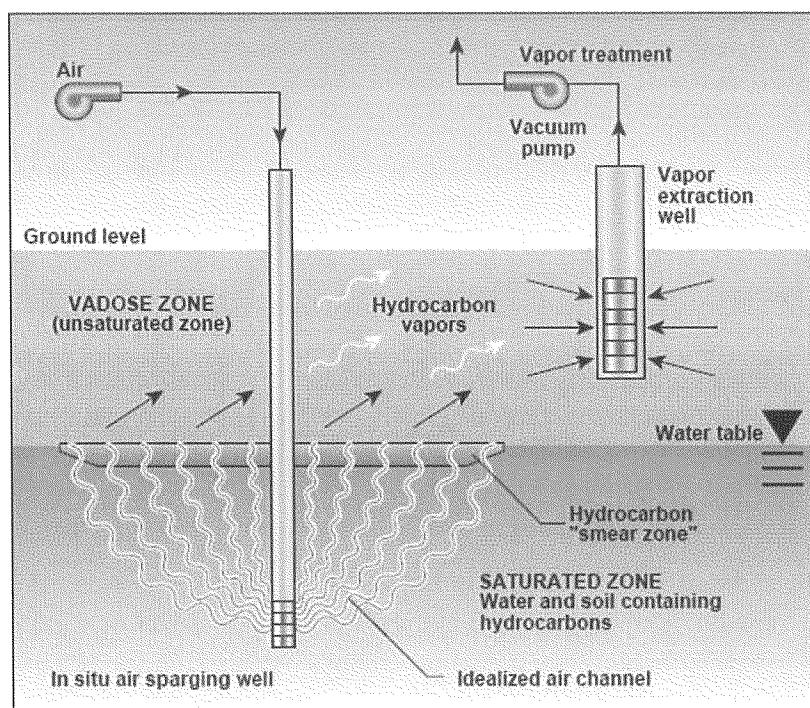
By M.C. Marley, E.X. Droste, H.H. Hopkins and C.J. Bruel

From Environmental Management: Wastewater and Groundwater Treatment

Excerpted from:

In situ air sparging (IAS) is used to remove volatile organic compounds (VOCs) from groundwater aquifers. Conceptually, the standard IAS process is simple — clean air is injected into an aquifer beneath the water table. This induces the mass transfer of VOCs dissolved in groundwater, forcing them into the vapor phase. It also adds oxygen to the groundwater, promoting aerobic bioremediation (Figure 1). By forcing contaminated vapors to migrate from the saturated portions of the aquifer to the vadose (unsaturated) zone above the water table,

IAS promotes aquifer remediation by a host of physical, chemical and biological processes.



To control the potential migration of organic vapors as they move from the aquifer to the vadose zone — or to capture unwanted pollutants for destruction or recycling at the surface — soil vapor extraction (SVE) is often applied in conjunction with IAS [1,2]. In such a setup, vacuum pumps at the surface induce the movement of sparged contaminants to a series of vapor-extraction wells. Vapors collected at the surface are then subjected to any combination of standard ex situ treatment schemes, including carbon adsorption, catalytic oxidation, biofiltration or condensation.

FIGURE 1 (above). By injecting air beneath a groundwater aquifer, air sparging operations can induce aquifer mixing, and promote the volatilization or biodegradation of dissolved organic contaminants. Vapor-extraction wells then create a vacuum in the subsurface, to direct the flow of liberated vapors to recovery or monitoring wells